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August 9, 1988

Michelle M. Glenn
USEPA Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

SUBJECT: REVISED BLUFF ROAD IMPLEMENTATION PLAN

Dear Ms. Glenn:

Pursuant to the Administrative Order By Consent, your comments of July 26, 1988 and our meeting of July 27 with you and Versar, enclosed is the final revision of the Implementation Plan for the Bluff Road Project.

We believe this revision addresses all USEPA comments. As agreed, a supplemental schedule (Figure 3-2 of the attached Implementation Plan) is provided as an estimate of overlapping and parallel RI field investigation activities. Although the actual timing for specific activities may vary, the overall RI/FS Project Schedule (Figure 3-1 of the attached Implementation Plan) will not be impacted.

Although all necessary property access easements have not been obtained, within 7 days of USEPA approval of the Implementation Plan and issuance of notice to proceed, those tasks that can be implemented without full property access will be initiated.

If you or your staff have questions concerning this Plan, please contact me at (615) 691-5052.

Best regards,

Bennie L Underwood
For Michael A. Miller, P.E.
Senior Project Manager

cc: Lorelei Borland
IT Corporation

Attachment

Date: 08/08/88
Revision No.: 2

Site:	Scrdi Bluff
Break:	3.4
Other:	

IMPLEMENTATION PLAN FOR
COMPLETION OF THE
SCRDI-BLUFF ROAD SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Prepared by
IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923

IT Project No. 408619

July 1988

IMPLEMENTATION PLAN FOR THE
SCRDI-BLUFF ROAD SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Prepared by:

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312 Directors Drive
Knoxville, Tennessee 37923
IT Project No. 408619

July 1988

Approved:

Michael L. Cupps
Project Director, IT Corporation

Date:

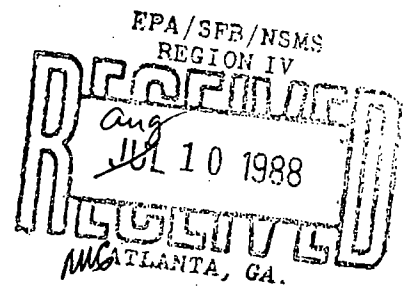
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Approved:

Michael L. Cupps
Project Manager, IT Corporation

Date:

8-8-88



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1.0 INTRODUCTION

The Potentially Responsible Parties (PRP) Group, hereafter known as the "Group", has entered into an Administrative Order by Consent (Consent Order or ACO) with the U.S. Environmental Protection Agency (EPA). The ACO became effective on or about April 21, 1988. The ACO requires that the Group submit an Implementation Plan to EPA describing how the work outlined in the EPA-furnished Remedial Investigation/Feasibility Study (RI/FS) Work Plan will be executed. This revised Implementation Plan fulfills that requirement.

The EPA-furnished Work Plan was prepared by Ebasco Services Incorporated (Ebasco) for EPA Region IV under the REM III Program (Contract No. 68-01-7250, Work Assignment No. 189-4L15). With the accompanying Field Operations Plan (FOP), which consists of the Field Sampling and Analysis Plan (FSAP) and the Health and Safety Plan (HASP), the Ebasco Work Plan describes the EPA Region IV approved approach to completing the RI/FS for the Bluff Road Site.

The PRP Group for the Bluff Road Site RI/FS will be conducting the work. This Work Plan and the FOP have undergone revisions at the direction of EPA so that the work may be conducted by the Group, outside the REM III program requirements.

An RI of the Bluff Road Site was initiated in 1984 by Golder Associates (Golder) under the direction of the South Carolina Department of Health and Environmental Control (SCDHEC). Versar, Inc. (Versar) reviewed Golder's Draft RI Report for EPA under the TES III program (Work Assignment No. 353 of EPA Contract No. 68-01-731). As a result of this review, Versar identified data gaps in the Golder RI, developed recommendations to fill those gaps, and prepared written plans for completing the Bluff Road RI/FS. Versar's project plans, as reviewed and approved by EPA, consist of:

- Final RI/FS Completion Work Plan (submitted July 8, 1987)
- Final Sampling Plan (submitted August 18, 1987)
- Final Data Management Plan (submitted August 18, 1987)
- Final HASP (submitted September 8, 1987).

On September 25, 1987, following acceptance of the four Versar plans, EPA issued Work Assignment No. 189-4L15 to Ebasco to conduct the RI/FS under the REM III program. The first requirement of this assignment was the preparation of the detailed project Work Plan.

The Ebasco Work Plan supersedes the Versar documents and includes all the essential elements of the RI/FS program recommended in the Versar Work Plan but has been reorganized and expanded to conform to the latest requirements of EPA guidelines for preparing RI/FS Work Plans and conducting RI/FS projects. Specific elements added to this Work Plan that were not explicitly addressed in Versar's Work Plan include:

- A preliminary identification of Applicable or Relevant and Appropriate Requirements (ARARs)
- Development of preliminary remedial response objectives
- Preliminary identification of applicable remedial technologies
- Definition of Data Quality Objectives (DQOs)
- Consideration of a possible Expedited Response Action for an aboveground tank that remains on the site
- Community relations support.

IT Corporation (IT) of Knoxville, Tennessee entered into a contract with the Group to complete the RI/FS. IT will provide technical services for performance of the RI/FS, including procurement of goods and services for execution of all tasks identified in the RI/FS Work Plan and supporting documents. The project team members and their functions are identified in Table 1-1.

The Group also entered into a contract with de maximis, inc. of Knoxville. The Group retained de maximis, inc. to provide project coordination for the work performed by IT, to provide technical direction to IT on behalf of the Group, and to be the primary liaison between EPA and the Group and their contractors.

TABLE 1-1
RI/FS Project Organization/Responsibility

<u>Individual</u>	<u>Title</u>	<u>Responsibilities</u>
Dwight Erikson	Project Manager	<ul style="list-style-type: none"> ° Tracking the needs and requirements of the project and assigning duties to the project staff ° Supervising the performance of project team members ° Providing budget and schedule control ° Maintaining project record system ° Reviewing subcontractor work and approving subcontract invoices ° Verifying that major project deliverables are reviewed for technical accuracy and completeness before their release ° Verifying that the project quality assurance requirements are satisfied ° Ensuring that regulatory requirements are met and interfacing with the Group
Susan Gawarecki	Principal Investigator	<ul style="list-style-type: none"> ° Coordinating technical resources for the Project Manager and project staff ° Determining and implementing the technical requirements of the project ° Reviewing project technical activities to ensure all data and quality objectives are met. ° Reviewing reports for compliance with State of South Carolina and EPA technical requirements ° Interpreting all technical data to characterize the condition of the site ° Evaluating proposed remedial technologies with respect to site characteristics
Paul Kuhlmeier	Project Engineer	<ul style="list-style-type: none"> ° Coordinating activities with the Project Manager and Principal Investigator ° Obtaining subcontractor services ° Coordinating orientation and any necessary training for field personnel (including subcontractors) on the requirements of the project plans

TABLE 1-1 (continued)

<u>Individual</u>	<u>Title</u>	<u>Responsibilities</u>
Paul Kuhlmeier (continued)		<ul style="list-style-type: none"> ° Monitoring drilling and sampling operations to ensure that the drilling contractor and sampling team members adhere to the Sampling and Analysis Plan and project quality requirements ° Establishing and maintaining a field records management system ° Proposing and characterizing remedial alternatives for the site
Corey Wallace	Project Geologist	<ul style="list-style-type: none"> ° Reviewing and implementing geologic data collection plans ° Providing direction and supervision to the drilling contractor during the drilling of soil borings and installation of monitoring wells ° Supervising borehole logging and other geological data interpretation activities ° Overseeing field data documentation and conducting quality checks on drilling logs and other interpretative geologic work products ° Assuming the duties of the Field Health and Safety Coordinator (HSC) at the direction of the staff HSC
Walter Wrightson	South Carolina Registered Geologist	<ul style="list-style-type: none"> ° To verify, approve, and seal all geologic maps, plans, or interpretations to be submitted to State or EPA officials

1.1 SITE BACKGROUND

1.1.1 Site Investigations Performed by EPA Region IV and the SCDHEC

The first investigation conducted on the Site was performed by the Surveillance and Analysis Division of EPA. Results are described in EPA's report, "Ground Water and Surface Water Investigation, South Carolina Recycling and Disposal, Inc., Bluff Road Site, Columbia, South Carolina," July 1, 1980.

Ground water conditions at the Site were investigated by the SCDHEC and described in their report, "Investigation of Ground Water at South Carolina Recycling and Disposal Company, Bluff Road Site, Richland County, South Carolina" (January 1981). Ground water sampling was again performed by the SCDHEC in August 1982 and the results published as an addendum to the 1981 report.

1.1.2 Golder Associates' Remedial Investigation

Golder commenced a remedial investigation of the Site and adjacent affected properties in 1985 and 1986. This RI was never completed, apparently due to lack of funding to support scope of work changes. Results of the RI are described in Golder's second draft report (April 1986) entitled "Remedial Investigation, Bluff Road Site, Richland County, South Carolina."

1.1.3 Site Radiological Survey

SCDHEC's Bureau of Solid and Hazardous Waste (BSHW) and the South Carolina Bureau of Radiation Protection (BRP) conducted a radiological survey of the Site in February 1988.

The survey revealed no gamma radiation readings above background levels. Therefore, it is unlikely that contamination by gamma-emitting radionuclides exists in the survey area.

2.0 EXCEPTIONS TO EBASCO REMEDIAL INVESTIGATION AND FEASIBILITY STUDY TASKS

The Ebasco Work Plan will be implemented as stated except for the proposed changes. Tasks and subtasks from the Ebasco Work Plan are discussed below only if the Group proposes a modification or if a clarifying statement is added. These exceptions are discussed in detail below. A summary of tasks and subtasks identified in the Ebasco Work Plan and the Group's plan for implementation is provided in Appendix B of this Implementation Plan.

2.1 TASK 02: COMMUNITY RELATIONS

Community relations were not discussed in the Ebasco Work Plan. It is the understanding of the Group that EPA Region IV will prepare and implement the Site Community Relations Plan as necessary.

2.2 SUBTASK 3.2: AIR MONITORING

Quantitative VOC air quality monitoring will be performed by utilizing two automatic samplers to collect ambient air samples. One sampler will be located near the area of greatest OVA/HNu reading obtained during an initial traverse of the Site proper and Site perimeter. The other sampler will be located at the Site perimeter on the downwind side. The automatic samplers will each fill a Tedlar® bag with ambient air over a 2-hour period. All bags will be screened for total hydrocarbons using the OVA. The bags with the highest total concentrations will be subjected to further analysis with a portable gas chromatograph (GC) for volatile organic compounds (VOCs) known to be at the Site at the time of the Golder RI (1985) and additional VOCs (if any) that are identified during ongoing sampling. The GC will be a photoionization detector (PID) or a flame ionization detector (FID) type, as available. No separate analyses will be required, and results will be available daily.

Air quality monitoring for personal protection during sampling will include walking the Site perimeter at 2- to 3-hour intervals with the OVA or HNu and monitoring soil samples, boring locations, or other suspect areas. The HNu will be calibrated to benzene and the OVA will be calibrated to methane; contaminants identified in the quantitative VOC air quality monitoring will be

evaluated to verify instrument response. At present, Level C protective clothing is required by EPA for the Site proper (i.e., the SCARDI property). Data collected will be evaluated, and a recommendation will be made by IT to continue the Level C protection, downgrade to Level D, or upgrade to Level B. The recommendation to downgrade to Level D will be made if maximum airborne organic pollutant concentrations, defined as the highest instrument reading that persists through any 5-minute monitoring period, are found to be less than 5 ppm in the breathing zone. Breathing zone tests will be conducted at 2- to 3-hour intervals or more often if necessary depending on changes in field activities.

2.3 SUBTASK 3.3: PRIVATE WELL INVENTORY

The well survey and data search will be performed under the supervision of Dr. William Kanes and Mr. Michael Waddell of the Earth Sciences and Resources Institute (ESRI), University of South Carolina. The wells surveyed will be within 1 mile downgradient from the Site and will be tabulated as private, public, or commercial/industrial wells. No ground water sampling will be performed.

ESRI staff will also have the clay mineralogy analyses performed on samples collected from the clay layer that forms the base of the unconfined aquifer. These samples will be collected during construction of the additional monitoring wells.

2.4 SUBTASK 3.4: SURFACE SOIL SCREENING

A layer of fill soil was spread over the site subsequent to drum removal operations. Consequently, surface soils will be sampled from below this layer with a push tube. EPA will analyze a 10 percent split of the samples for QA purposes as specified and collected in the field by Versar, the EPA Oversight Contractor.

2.5 SUBTASK 3.5: SURFACE WATER AND SEDIMENT SAMPLING

See discussion in Section 2.9.

2.6 SUBTASK 3.6: GROUND WATER SCREENING

A passive soil organic vapor (SOV) survey will be performed on the Site and adjacent properties that may be affected by VOCs which have migrated from the Site. The survey will be performed by an IT subcontractor, Northeast Research Institute, Inc. (NERI) of Farmington, Connecticut. The SOV survey will be performed by the Petrex Method, an effective means for determining the extent of volatile organics contamination over large areas.

The Petrex method for trapping and detecting VOCs emanating from contaminated ground water consists of placing a static trapping device just below the soil surface then leaving it in the ground for 7 to 30 days. This ensures time-integrated collection of gas flux data. Analysis of the trapped compounds is performed by Curie-point desorption mass spectrometry.

Results of past Petrex soil gas surveys have demonstrated that the technique is a powerful tool for delineating subsurface contamination for volatile organics. In areas of extensive hydrogeologic control there is a good correlation between surface flux data and contaminant levels in ground water. The technique is useful for inferring the extent and apparent direction of contamination migration where limited hydrogeologic data exist.

The objectives of the Petrex soil organic survey are to:

- Collect and identify VOCs in the soil gas that may be indicative of soil or ground water contamination in and around the SCRDI property.
- Map the areal extent and indicate areas of soil contamination and/or potential ground water contamination.

The Petrex survey plan is included as Appendix C to this plan.

All ground water samples will be collected from the 20 usable Golder wells and analyzed for EPA Target Compound List (TCL) VOCs and metals. In addition, 20 percent of these samples will be analyzed for other TCL substances. Ten percent of the samples will be split with EPA for quality assurance purposes, as specified and collected in the field by Versar. The list of wells to be sampled are described in Appendix A of this document. Samples will be shipped to

IT's Knoxville, Tennessee Analytical Laboratory for analysis. Analyses will be performed according to Contract Laboratory Program (CLP) protocol.

An attempt will be made to locate, mark, and record the positions of all historical monitoring wells installed on or near the Site. It may be difficult or impossible, however, to locate several of the SCDHEC wells. During the Golder RI field work three of these wells could not be located and one was abandoned. All SCDHEC wells and unusable or unnecessary Golder wells will be properly abandoned during Phase II of the RI.

2.7 SUBTASK 3.9: INSTALLATION AND SAMPLING OF TEMPORARY WELLS

Approximately 16 temporary wells will be installed by driving 2-inch stainless steel points into the sandy soil to a depth of 10 to 15 feet. Well locations shown in Figure 2-1 are subject to change based on field conditions and EPA approval.

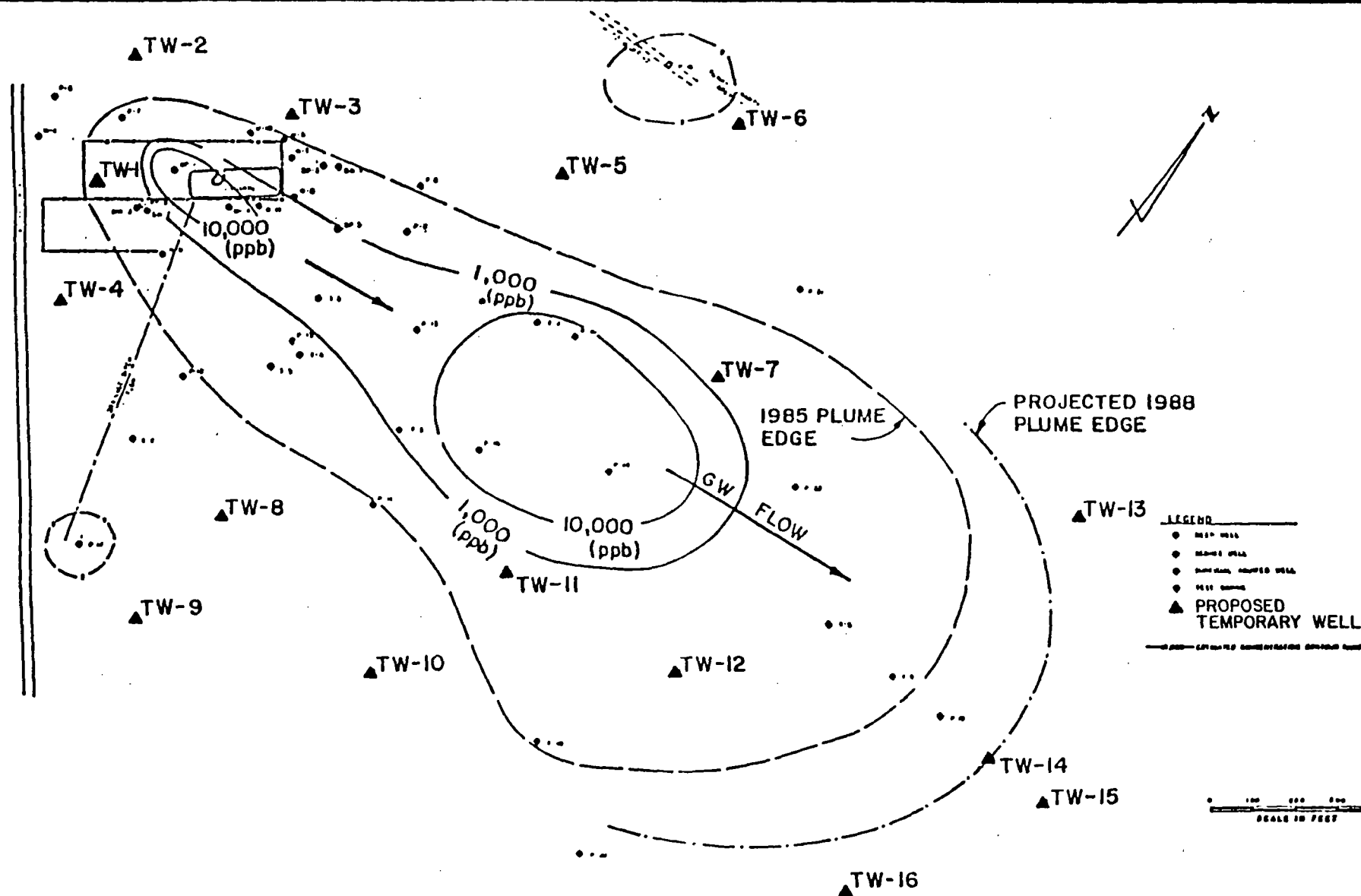
2.8 SUBTASK 3.11: GROUND WATER INVESTIGATIONS

At this time, the Group takes no exception to this subtask. The Group may, however, propose permanent well locations different from those tentatively identified by Ebasco (see Figure 4-6 of the Ebasco Work Plan), based on results of the SOV survey, soil borings, and temporary well data. Any changes to the Ebasco Work Plan will be proposed to EPA in writing.

2.9 SUBTASK 3.12: AQUATIC BIOTA SURVEY

IT will perform an aquatic biota survey along a section of Myer's Creek if it is determined that the creek has been adversely affected by contaminants from the Site. Based on site contaminants involved and data developed on the Site to date (i.e., the distance involved, the volatile nature of the contaminants, surface and subsurface movement of contaminants, and results of the Golder investigation), it is unlikely that the aquatic biota survey will be necessary. A decision not to perform the survey will be made by EPA on the basis of water and sediment sample results. EPA will take a 10 percent split of all samples collected for quality assurance purposes, as specified and collected in the field by Versar.

STARTING DATE:	DATE LAST REV.:	INITIATOR:	DRAWING NO.:
DRAWN BY:	DRAWN BY:	PROJ. MGR.	PROJECT NO.:



Modified From Golder Associates (1986)

FIGURE 2-1 TEMPORARY MONITORING WELL LOCATIONS PROPOSED BY THE GROUP

A decision tree, presented in Figure 2-2, is proposed to evaluate the need for this assessment of Myer's Creek. This decision tree allows an objective assessment of the impact of any potential surface water or ground water releases to Myer's Creek. The investigation steps shown in the decision tree will be performed to ensure that no unacceptable threat to human health or the environment has resulted from on-site releases. An assessment of the impacts or the stream biota will be warranted only if release occur that adversely affect Myer's Creek.

The possible surface water pathway to Myer's Creek is down a drainage ditch that leads to State Route 48 approximately 500 feet south of the Site, then via an intermittent stream which is intercepted by a logging road, diverting flow to the 12- to 16-inch deep ditch on the north (Site) side of the logging road (Figure 2-3). There is no culvert along the logging road to allow passage of water. Hence, it is highly unlikely that a surface water pathway exists from the Site to Myer's Creek.

Surface water (if present) and sediment samples will be taken from the intermittent stream on the south side of the logging road (Location No. 1) and from upstream of where the intermittent stream enters Myer's Creek (Location No. 2) and will be analyzed for full TCL. If results from these four samples indicate a potential problem, surface water and sediment samples will be taken from Myer's Creek. Percentage increase(s) in loading for site-related compounds will be calculated using the methodology in the EPA Technical Guidance Manual for Performing Waste Load Allocations. These increases will be compared to de minimis values where available as a basis for determining acceptable loading. Figure 2-2 is "decision tree" that illustrates this decision making process. Figure 2-3 is a map showing proposed sampling locations referred to in the text and in Figure 2-2.

The Golder Draft RI report identified a VOC contaminant plume moving east toward Myer's Creek. IT's projection of plume movement, based on Golder data, indicates that the leading edge of the plume is probably 2500 feet from Myer's Creek as of April 1988. If samples from the downgradient wells show contaminants attributable to the Site, additional wells will be installed near

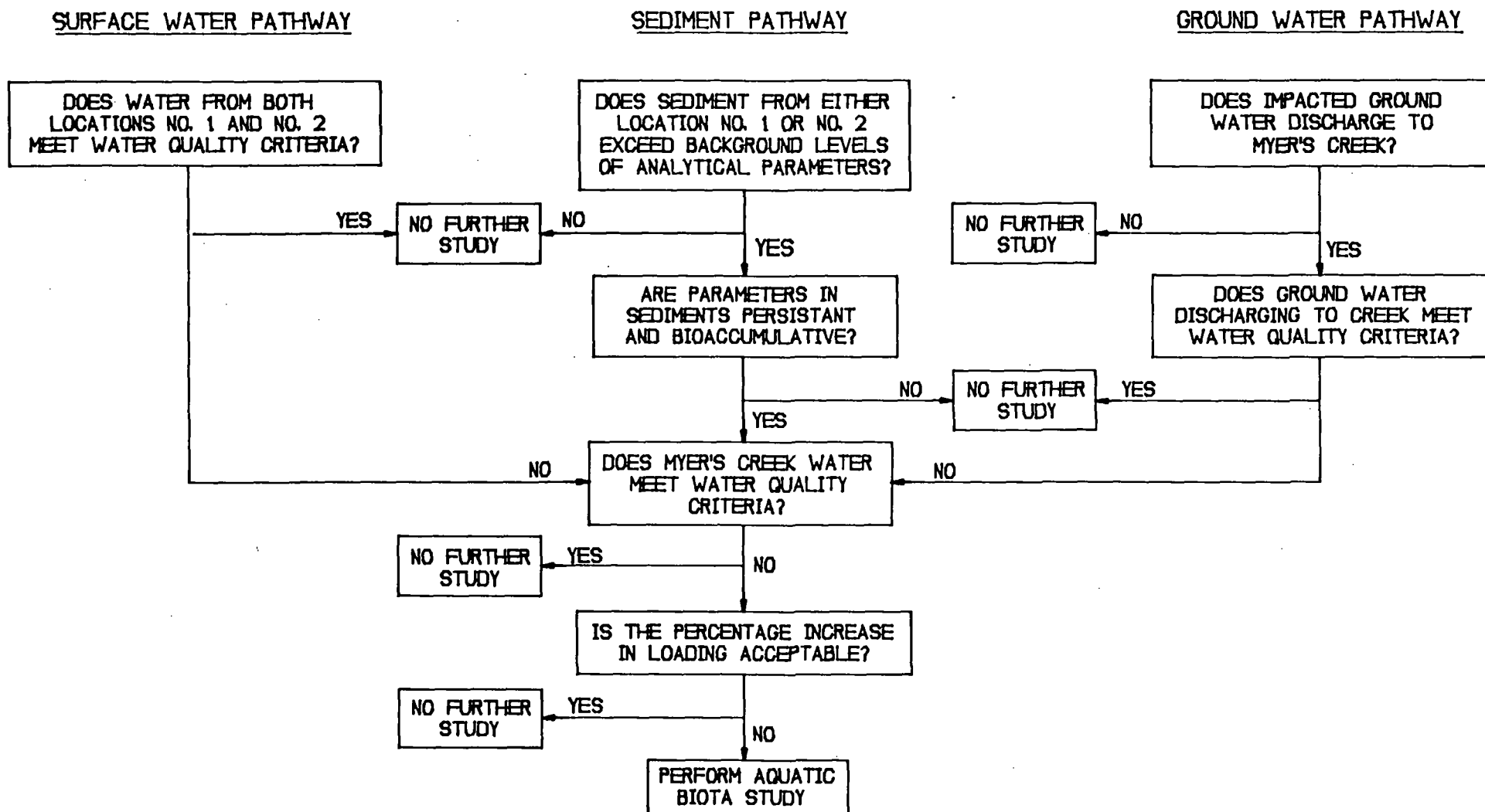


FIGURE 2-2 MYER'S CREEK AQUATIC BIOTA STUDY DECISION SCHEMATIC

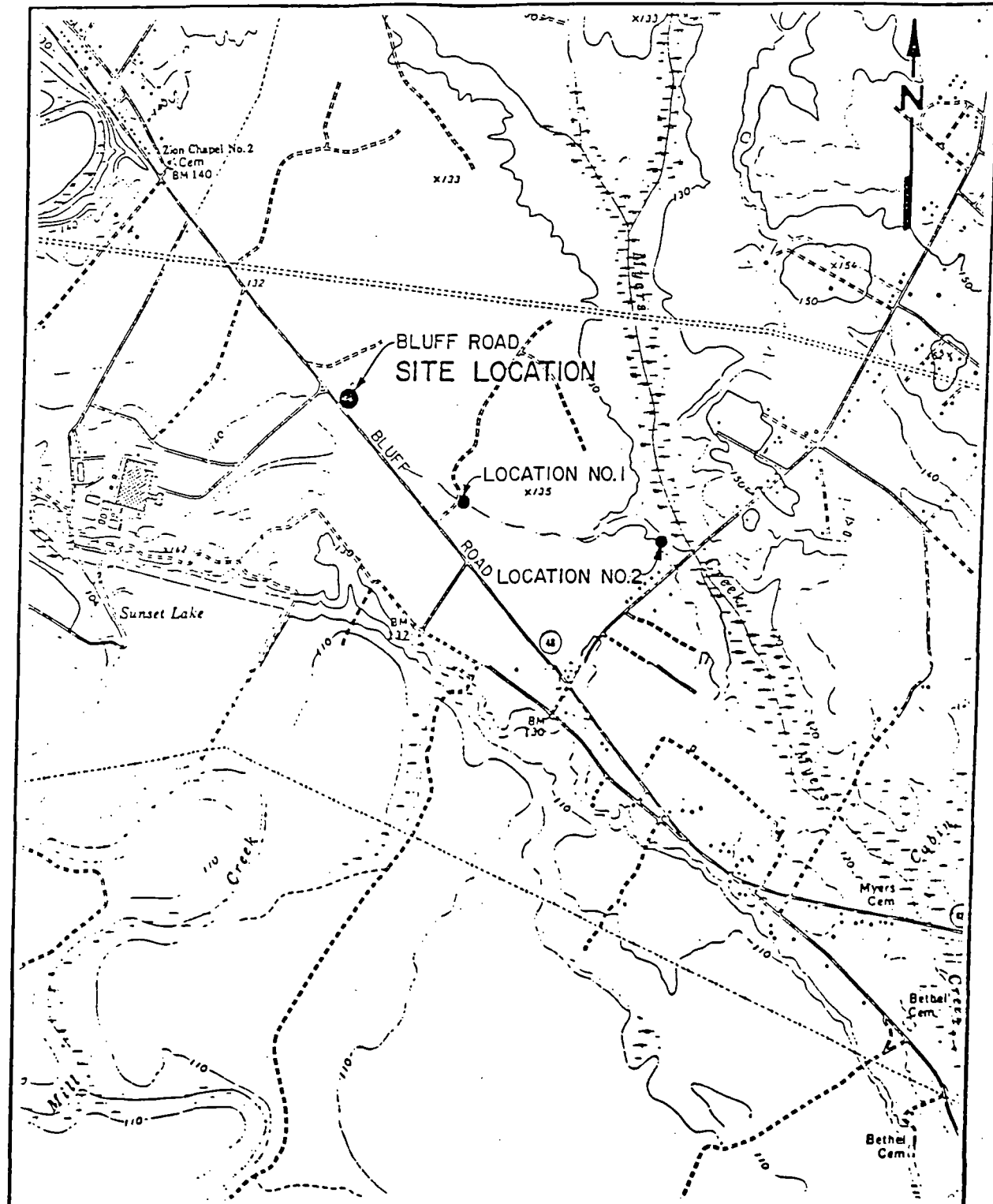


FIGURE 2-3
 SEDIMENT AND SURFACE WATER SAMPLING LOCATIONS
 FOR AQUATIC BIOTA SURVEY DECISION TREE



Myer's Creek and sampled for VOCs. If these samples contain contaminants at levels above ambient water quality (or equivalent) standards, surface water samples will be taken from upstream and downstream of the area where the plume is judged to enter the creek.

2.10 SUPPLEMENTAL SUBTASKS

The demographic and geographic aspects of the Site features investigation will be investigated to the extent necessary to support the Baseline Risk Assessment

(Task 6) for the RI report and the Public Health Evaluation (also Task 6) for the FS report. This work will be performed under the supervision of Dr. John Jakubs of the Department of Geography, University of South Carolina. Dr. Jakubs, an economic geographer, maintains a computerized database of census-related data on central South Carolina. This portion of the Site Features Investigation will include detailed information on the following:

- Demography (e.g., size, growth, density, and distribution of human population near the Site)
- Land use (e.g., agricultural, residential, recreational, industrial, etc.)
- Natural resources (e.g., minerals, timber, soil, wildlife, national or state forests)
- Climatology (e.g., average yearly precipitation, seasonal maximum and minimum daily temperatures, periods of heavy rainfall, wind patterns, etc.)
- Surface drainage patterns
- Surface waters and wetlands.

The key parameters investigated and analyzed for the Site will be described in detail. This discussion will include information that is pertinent to the technical, public health, and environmental analyses conducted for the feasibility study.

2.11 TASK 04: SAMPLE ANALYSES AND DATA VALIDATION

Within all tasks or subtasks requiring sample analyses (exception monitoring), the overall method explained below will be followed. All samples will be

analyzed for full TCL or for VOCs and metals only, with 20 percent of the latter samples subjected to full Target Compound List (TCL) analyses. The 20 percent of samples for full TCL analyses will be designated in the field with the concurrence of the Versar field representative. Field and trip blanks will be analyzed for the full TCL also. All analyses will be performed by IT Analytical Services (ITAS) in Knoxville, Tennessee, under Contract Laboratory Program (CLP) protocol. Ten percent of all samples will be split with EPA for independent verification, as specified and collected in the field by Versar. Table 2-1 is a summary of analyses to be performed on collected samples and the associated QA/QC requirements.

2.12 SUBTASK 6.2: EXPOSURE ASSESSMENT

A quantitative exposure assessment for each chemical modeled will be based on procedures outlined in the Superfund Public Health Evaluation Manual (EPA, 1986) and other appropriate references in the scientific and regulatory literature. Exposure models from the scientific literature (e.g., those in the Environmental Pathways Uncertainty and Screening Model [(Envirosphere, 1987) developed by the California Energy Commission] will be modified as appropriate for use in the quantitative assessment of each relevant pathway. If EPA provides the EBASCO computer program (Section 4.6.2 of the EBASCO-prepared work plan), IT will evaluate this model to determine its appropriateness for the Bluff Road site.

Table 2-1. Summary of Analytical Requirements and Related QA/QC Requirements
Bluff Road Site, Columbia, South Carolina

Sampling Task	No. of Samples and Media ^a	No. of Duplicate Samples	No. of Field Blanks ^b	No. of Trip Blanks ^b	Total No. of Samples	Analyses ^c
Surface soil samples	34-soil	3	1	1	39	Volatile organics, metals
Existing monitor well ground water samples	20-water	2	1	1	24	Volatile organics, metals
Surface water samples	2-water	1	1	1	5	Full TCL
Sediment samples	2-soil	1	1	1	5	Full TCL
Lagoon surface water samples	3-water	-	1	-	4	Full TCL
Lagoon sediment samples	3-soil	-	1	-	4	Full TCL
Lagoon soil samples	6-soil	1	1	1	9	Full TCL
Ground water temporary wells	16-water	1	1	1	19	Volatile organics, metals
Soil boring split spoon samples	Soil ^d	-	-	-	-	Full TCL
Ground water samples new monitor wells	Water ^d	-	-	-	-	Volatile organics, metals

^aVersar (EPA Oversight Contractor) will specify and collect split samples for EPA in the field.

^bField and trip blanks will be analyzed for the full TCL.

^cTwenty percent of samples to be analyzed for volatile organics and metals only will be analyzed for full TCL (extractable organics, pesticides, PCBs, volatile organics metals, cyanide).

^dNumber of monitoring wells and associated samples to be determined based on results of initial field investigation.

Note: EPA will provide QA spikes and blanks periodically during the field investigation.

3.0 SCHEDULE

The RI/FS will be conducted in accordance with the schedule shown in Figure 3-1. The investigation outlined in Appendix B is broken into tasks and subtasks as shown in the schedule. The schedule assumes that a 4-month period will be required for preparation, discussion, and EPA Region IV approval of project plans. The RI/FS is expected to take approximately 11 months to complete after approval of plans, assuming a draft document review time of 4 weeks each for the RI and FS reports. A period of 28 days is required from the notice to proceed by the EPA to begin field activities on the Site, provided site access has been secured from the property owner. If a site access agreement has not been obtained from the property owner at the time of plan approval, approximately 2 weeks will be required after access is granted by the owner for IT to begin site work. The field investigation portion of the RI/FS schedule is shown in Figure 3-2. Variances in the RI/FS Project Schedule (Figure 3-1) could be encountered because of subcontractor schedule problems, regulatory review time requirements, or inclement weather. If such problems can be foreseen, de maximis will notify the Group and the EPA Region IV Project Officer in accordance with procedures defined in the ACO.

3-2

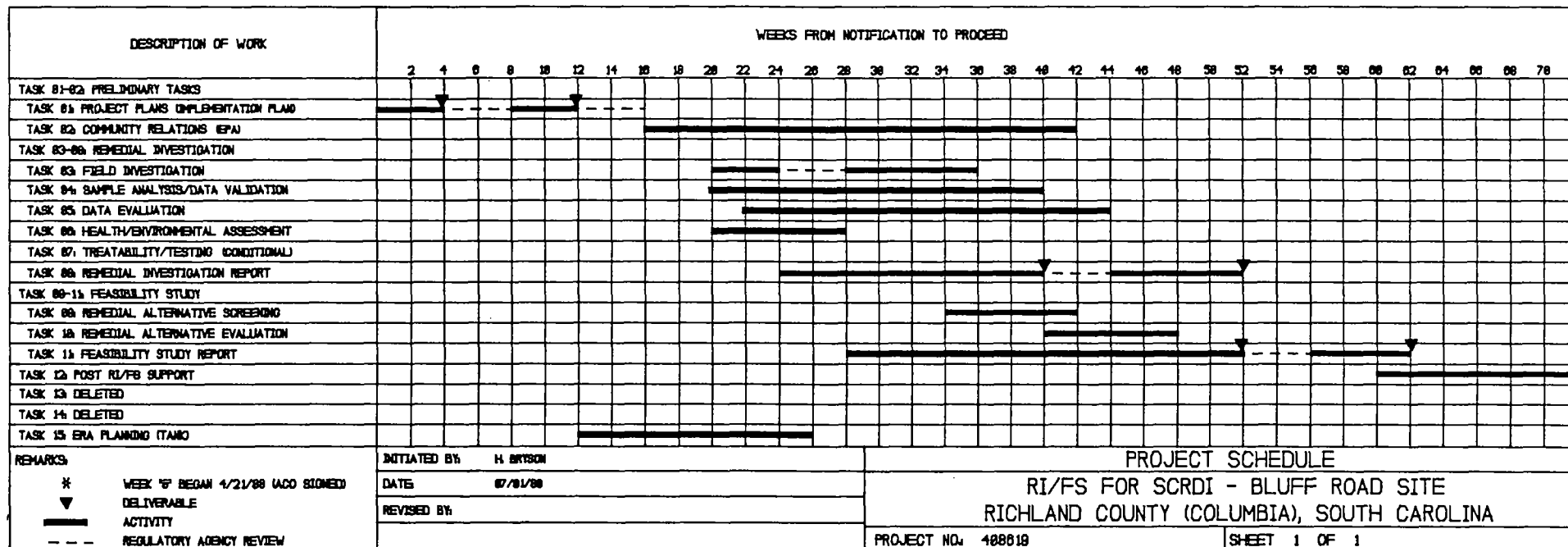
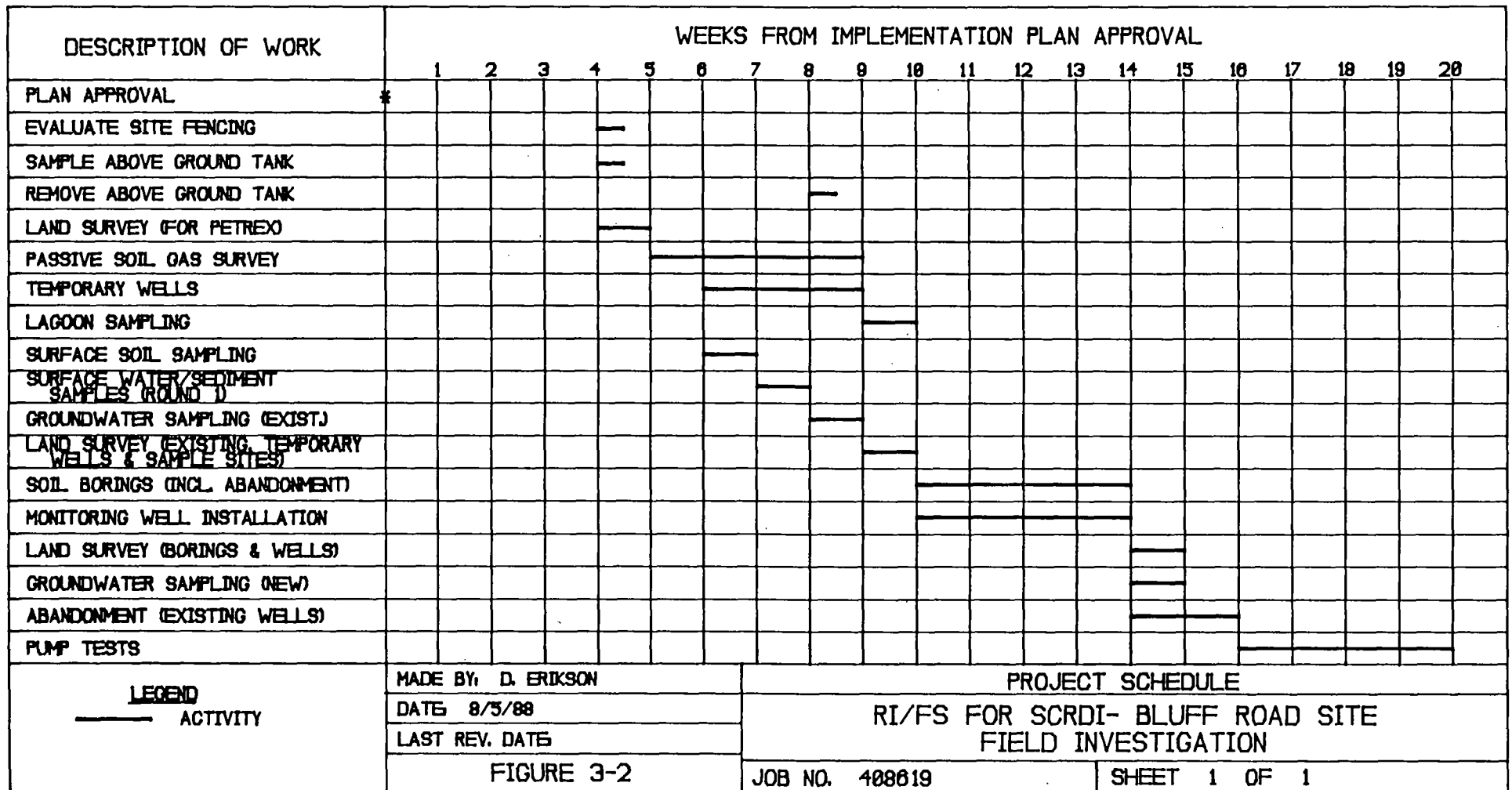


FIGURE 3-1 PROJECT SCHEDULE



4.0 REFERENCES

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1988, prepared by the South Carolina Department of Health and Environmental Control, Bureau of Radiological Health, Radioactive Waste and Compliance Engineering Section, Columbia, South Carolina, February 3, 1988.

SME, 1982, Groundwater Hydrology at Westinghouse Electric Corporation, Richland County, South Carolina, Report No. H8119, Soil & Material Engineers, Inc., 1982.

Versar 1987a, Final Remedial Investigation/Feasibility Study Completion Work Plan, Bluff Road Site, Columbia, South Carolina, Work Assignment 353, EPA Contract No. 68-01-7331, Submitted to Camp Dresser & McKee Federal Programs Corporation, Fairfax, Virginia, July 1987.

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APPENDIX A

SCRDI-BLUFF ROAD SITE:

EVALUATION OF AVAILABLE
ANALYTICAL DATA AND MONITORING WELLS/
PIEZOMETERS FROM PREVIOUS
SITE STUDIES

APPENDIX A

EVALUATION OF AVAILABLE SITE DATA

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APPENDIX A

EVALUATION OF AVAILABLE SITE DATA

A.1 EVALUATION OF SITE DATA TO DATE

IT has reviewed and evaluated the documents summarized in Subsections A.1.1 through A.1.3. The findings follow.

A.1.1 Evaluation of Site Analytical (Chemical) Data

A.1.1.1 EPA Region IV Data (1980)

IT considers all EPA Region IV data (EPA, 1980) to be unusable at this time because of the changes made in site conditions. These changes are due to the 1983 removal action (when waste drums and grossly contaminated soils were removed) and natural dissipative forces that have been ongoing since the removal [e.g., evaporation of volatile organic compounds (VOCs); dilution of all contaminants by dissipation in soil and ground water; biodegradation of organics].

A.1.1.2 SCDHEC Data (1981)

IT considers all 1981 SCDHEC data (SCDHEC, 1981) to be unusable because the wells were poorly constructed.

A.1.1.3 Golder Associates Data (1985 - 1986)

IT considers the Golder data to be usable, subject to certain limitations. IT considers the following types of data to be usable and representative of site conditions at the time of data collection:

- Metals data
- Volatile organics data
- Acid and base/neutral extractable organics data
- Polychlorinated biphenyl (PCB) data
- Pesticides data.

However, care must be exercised when using data because many samples were composited. In addition, VOC data for samples whose holding times were exceeded could be lower than actual at the time of sample collection depending

on the care that was taken in sample collection, sealing, preservation, and storage. As a whole, the VOC data present a coherent picture of ground water plume development and movement; this picture is in general agreement with observed topographic features and geohydrological conditions. The specific chemical contaminants, with a few exceptions, were also consistent throughout the data.

A.1.2 Evaluation of Site Physical Data

A.1.2.1 Soil Physical Data

IT considers all soil physical data generated by Golder to be usable.

A.1.2.2 Ground Water Physical Data

IT considers all ground water physical data collected by Golder (i.e., pH, specific conductance, temperature, water levels) to be valid for the time period (1985 to 1986) in which these measurements were made.

A.2 SUMMARY STATUS OF SITE GROUND WATER MONITORING WELLS

Thirty-six ground water monitoring wells and two pump test wells were installed at the Site and immediate vicinity between 1980 and 1985. The status of these wells as reported by Golder (1986) is summarized in Tables A-1 and A-2. Figures A-1 and A-2 show the locations of wells installed by SCDHEC (1980) and Golder (1985).

A.2.1 SCDHEC Wells

SCDHEC installed 11 ground water monitoring wells at the Site in 1980. The wells were constructed with 2-inch diameter polyvinyl chloride (PVC) materials; they were not equipped with locking covers. The status of the wells as of August 1985 was reported by Golder (1986). The results are summarized in Table A-1.

A.2.2 Golder Associates Wells

Golder installed five shallow (<50 feet) and three deep (>70 feet) wells in March and April 1985, and another 16 deep wells (50 feet) and one shallow (20 feet) well were installed in November and December 1985. Three of

Table A-1. Summary Status of Monitoring Wells Installed by
SCDHEC in 1980 (As of August 1985)

Well Designation	Approximate Depth (ft)	Status as of August 1985
W-1	22.5	Intact
W-2	Unknown	Could not be found; presumed destroyed
W-3	Unknown	Could not be found; presumed destroyed
W-4	Unknown	Casing broken off at ground surface; "sealed" by filling casing with bentonite pellets to ground surface (per SCDHEC request)
W-5	Unknown	Could not be found; reported destroyed by SCDHEC in 1981
W-6	11.5 (\pm)	Intact
W-7	10.5 - 11	Intact
W-8	12 (\pm)	Intact
W-9	Unknown	Intact (presumably; in heavy underbrush)
W-10	14 (\pm)	Intact
W-11	11.5 (\pm)	Intact; evidence of having been sub- merged by surface water

Table A-2. Summary Data on Wells Installed by Golder Associates (1985)

Well Designation	Approximate Depth (ft)	Screened Interval (ft below ground surface)	Status as of August 1985
1. "Initial" Phase Wells			
a. Shallow Wells			
BP-1	50	8.0 - 50.0	1-in diameter PVC with tubes of 3/8-in. polyethylene tubing connected to 10 vyon piezometric tips
BP-2	49	5.5 - 49.0	Same as BP-1, except with 9 vyon tips
BP-3	49	8.0 - 49.0	Constructed of three 1-in. diam PVC pipes and one 2-in. diam PVC pipe; piezometer tips placed at depths of 12, 20, 34, and 40 feet
BP-4	45	7.5 - 45.0	Same as BP-3
BP-5	48.5	8.0 - 48.5	Same as BP-3
b. <u>Deep Wells</u>			
DW-1	144.0	88.0 - 115.0	2-in. diam PVC screen and casing inside 6-in. diam PVC casing
DW-2	95.0	59.0 - 95.0	Same as DW-1
DW-3	129.5	94.0 - 120.0	Same as DW-1

Table A-2. (Continued)

Well Designation	Approximate Depth (ft)	Screened Interval (ft below ground surface)	Status as of August 1985
2. <u>Second Phase Wells</u>			
a. <u>Intermediate Depth Monitoring Wells</u>			
P-6 ^a	49	7.1 - 47.6	2-in. diam PVC; screened throughout saturated thickness (~40 feet) locking cap installed
P-7 ^a	46.5	4.7 - 45.2	Same as P-6
P-8 ^a	51.5	9.3 - 49.3	Same as P-6
P-9 ^a	51.0	9.3 - 49.8	Same as P-6
P-10 ^a	51.5	7.9 - 48.4	Same as P-6
P-11 ^a	51.5	9.0 - 49.5	Same as P-6
P-12 ^a	50.0	6.0 - 46.5	Same as P-6
P-13 ^a	51.5	8.9 - 49.4	Same as P-6
P-14 ^a	51.5	9.5 - 50.0	Same as P-6
P-15 ^a	49.7	8.1 - 48.6	Same as P-6
P-16 ^a	51.1	10.6 - 51.1	Same as P-6

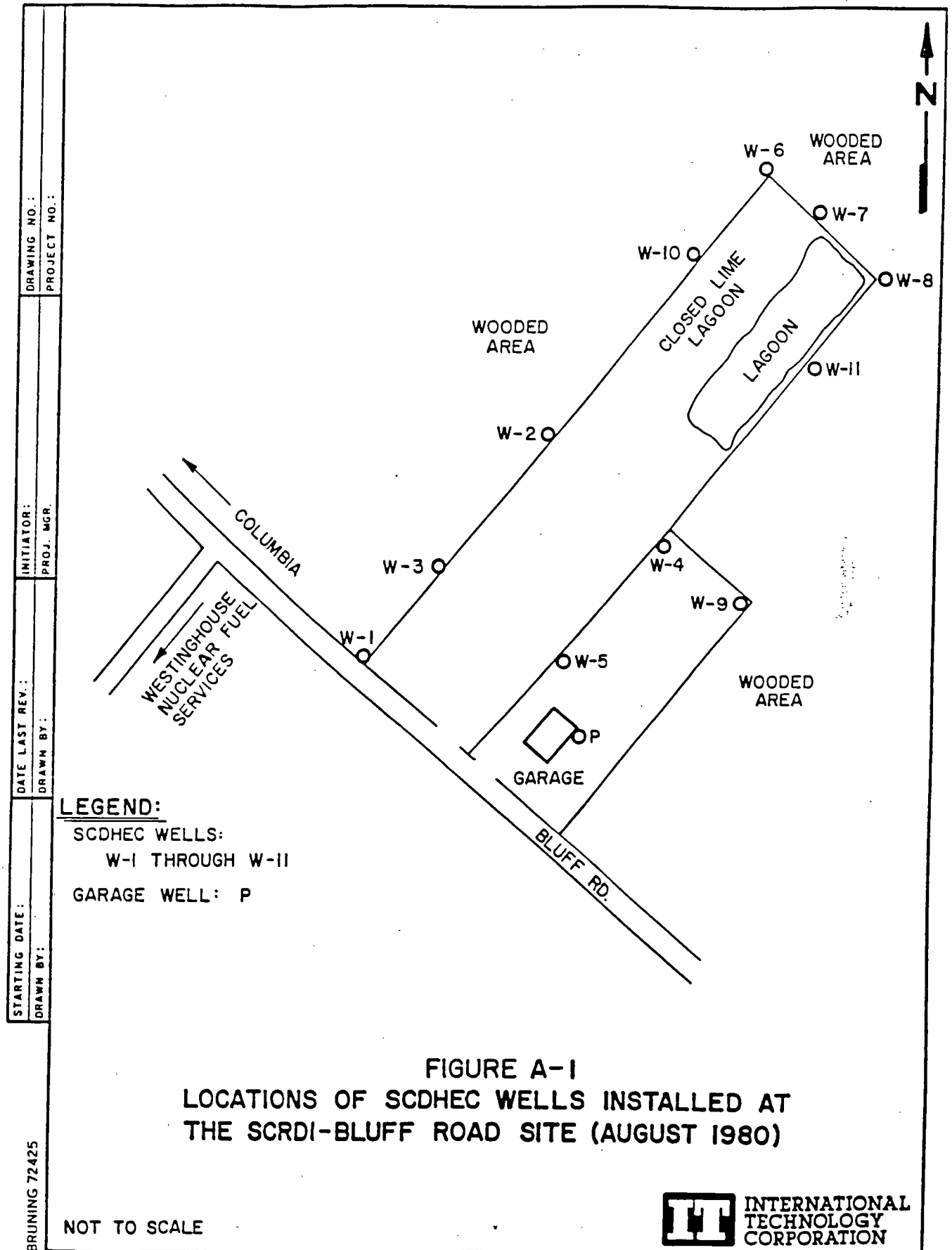
A-5

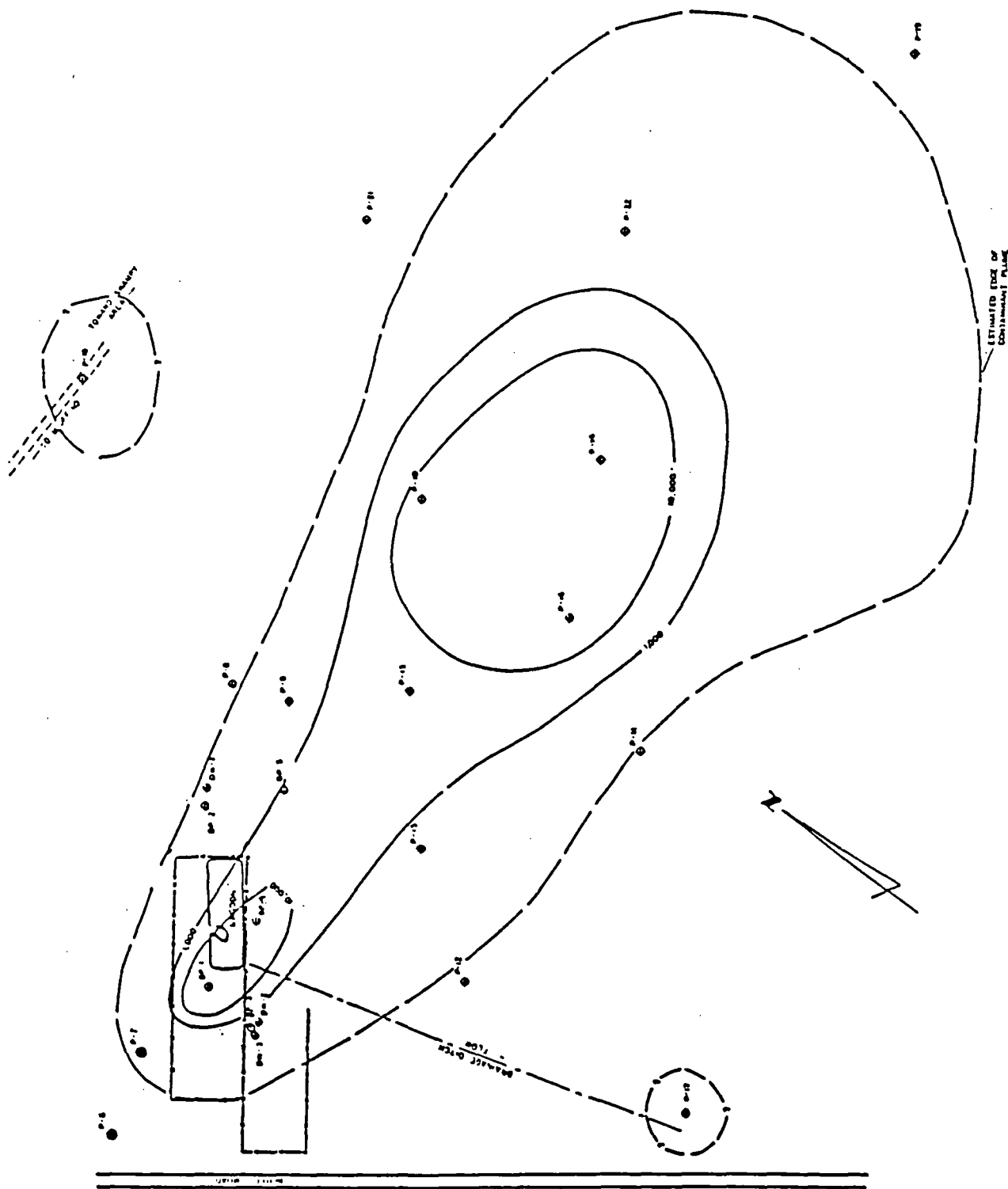
Table A-2. (Continued)

Well Designation	Approximate Depth (ft)	Screened Interval (ft below ground surface)	Status as of August 1985
P-17 ^a	19.9	7.0 - 17.5	Construction same as P-6, except only to 20 feet; screened to top of aquifer
P-18 ^a	52.3	10.0 - 50.0	Same as P-6
P-19 ^a	50.5	4.6 - 44.6	Same as P-6, except not developed
P-20 ^a	50.0	16.8 - 46.8	Same as P-19
P-21 ^a	49.2	8.0 - 48.0	Same as P-19
P-22 ^a	51.5	14.3 - 48.8	Same as P-19
b. <u>Observation Wells</u>			
0-1	53.0	14.2 - 49.5	Well developed; 6-in. galvanized steel screen and casing
0-2	52.6	9.3 - 50.0	Well not developed; 2-in. PVC screen and casing

^aWells to be sampled during initial field work.

A-6





LOCATIONS OF WELLS INSTALLED BY GOLDER ASSOCIATES
FIGURE A-2

the SCDHEC wells have been reported destroyed (but not abandoned). In addition, one SCDHEC was "sealed" by Golder in 1985 by filling the casing with bentonite pellets according to SCDHEC instructions. Therefore, 32 of the 36 monitoring wells were in existence at the completion of work by Golder in December 1985.

A.3 EVALUATION OF EXISTING SITE WELLS

A.3.1 SCDHEC Wells (W-1 through W-11)

The current status of the SCDHEC wells is not known. However, none of the seven wells that were known to be intact in 1985 are suitable for ground water sampling for chemical analysis because the wells do not meet current EPA guidance on monitoring well construction. These wells may be suitable for ground water level measurements.

A.3.2 Golder Associates Wells (BP-1 through BP-5; DW-1 through DW-3; P-6 through P-22; O-1, O-2)

Because of the method of construction, wells BP-1 through BP-5 are unsuitable for ground water sampling but may be suitable for piezometric data (see Table A-2). The three deep wells, DW-1, DW-2, and DW-3, are constructed differently than the BP wells, as are wells P-6 through P-22. These 20 wells are probably suitable for collection of ground water samples for chemical and physical properties analyses, as well as for water level measurements in the unconfined aquifer. These wells are all 2 inches in diameter and of PVC construction. Well O-1 may be suitable for ground water sampling and water level measurements and will be evaluated in the field. Well O-2, a 2-inch PVC well, was never developed. Its proximity to other site wells makes it unnecessary for any purposes.

A.4 TYPES AND CONCENTRATIONS OF CONTAMINANTS PRESENT

A.4.1 Contaminated Soil

Previous studies performed by EPA Region IV and Golder indicate that the near surface soil (unsaturated zone) is contaminated with VOCs. Golder (1987)

reported the soil to be "contaminated" with heavy metals (selenium, zinc, copper, and chromium). However, the data (reported as total metals) showed concentrations ranging from 0.1 to 7 ppm. These concentrations may be at or near background levels.

A.4.2 Lagoons

The Golder report indicated that standing water in the lagoons at the time of the investigation (mid-1985) was not contaminated with VOCs. The water did contain low concentrations of copper, arsenic, and chromium. Lime sediment/sludge is present in the lagoon; this material was apparently placed in the lagoon during the time when the site was used for acetylene manufacturing. Trace amounts of two VOCs were found in the sediment along with low concentrations of some heavy metals.

APPENDIX B

IMPLEMENTATION PLAN SUMMARY BY
TASK AND SUBTASK

Table B-1. Implementation Plan Summary by Task and Subtask

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
Task 1	Project planning	Preparation of Work Plan memorandum; review of EPA file data; initial site visit; preliminary identification of ARARs and DQOs; preliminary risk assessment; preliminary identification of potential remedial alternatives; preparation of Work Plan, field sampling plan, site management plan, and health and safety plan	Preparation of Implementation Plan. Note: The preliminary risk assessment and site management plan were removed from the EBASCO documents at the direction of EPA. IT also reviewed the SCDHEC project files and discussed the site history with Mr. Chris Station, SCDHEC Project Manager, and with Helen McGill, a SCDHEC employee who took part in the February 1988 radiological (gamma) survey of the site.
Task 2	Community relations	Community relations activities were not addressed in the EBASCO Work Plan	It is the Group's understanding that EPA Region IV will be responsible for development and implementation of the Community Relations Plan.
Task 3	Field investigation	Task 3 consists of the 15 sub-tasks listed below.	The Group's implementation plans are noted by subtask below. In addition, the Group may erect a fence around the site, since the fence previously installed to provide site security has been stolen in sections over the past few years.
Subtask 3.1	Site reconnaissance	<ul style="list-style-type: none"> Visual inspection of the site for identification of waste disposal areas, above- and below ground tanks, leachate seeps, etc. List of local telephone numbers for local supplies and services 	<ul style="list-style-type: none"> IT and de maximis personnel have performed a reconnaissance of the site and adjoining acreage approximately one-half mile north and south of the site proper, and one mile to the east. An additional detailed site survey will be performed upon receipt of access. IT and de maximis have Richland County telephone books. IT has contacted some local companies for services and supplies.

B-1

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
		<ul style="list-style-type: none"> • Procurement of tax maps for identification of property owners. 	<ul style="list-style-type: none"> • County tax maps have been procured and a composite map generated showing all properties of interest. <p>In addition, aerial photographs have been taken and topographic maps prepared. One map is of the site proper and is 1 inch = 50 feet scale. Another is of the general area of interest and is 1 inch = 200 feet scale.</p>
Subtask 3.2	Qualitative Air Monitoring	<p>Onsite air quality monitoring investigations encompassing two regimes of air quality monitoring to meet the following objectives:</p> <ul style="list-style-type: none"> • General site survey to establish and verify levels of personnel and public protection • Target area survey to qualitatively identify potential sources of organic vapor emissions 	<p>The Group purposes to perform quantitative air quality measurements in order to justify downgrading site protective clothing requirements from OSHA Level C to Level D. Methods for both quantitative air quality measurements and air quality monitoring for personal protection are detailed in Section 2.2 of the Implementation Plan.</p>

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
Subtask 3.3	Private Well Inventory	A well inventory for identifying potential receptors within one mile downgradient from the site. Private residences will be contacted to determine if a well(s) is located on the property and to identify its use, depth, construction method, and installation if known. This information will be used to define the ground water classification and in risk assessment.	The private well inventory will be performed by a subcontractor from the University of South Carolina in Columbia.
Subtask 3.4	Surface Soil Screening	Thirty-four surface soil samples will be collected and analyzed to screen out and/or identify contaminated areas of the site. In addition, upgradient background samples will be collected. Downgradient samples will be collected for detection of contaminant migration. The previous soil gas survey conducted as part of the Golder RI will be utilized as a starting point to determine the extent of soil contamination.	Samples for surface soil screening will be collected with a push tube below the layer of added surface soil pursuant to SCDHEC comments. All samples will be analyzed for TCL volatiles and metals, and 20 percent for the full TCL. Ten percent of the samples will be split with EPA, as specified and collected in the field by Versar, the EPA Oversight Contractor.

B-3

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
Subtask 3.5	Surface Water and Sediment Sampling	A series of water and sediment samples will be collected to determine the extent of contamination, if any, in the surface water regime at the site. Additionally, sediment samples will be collected (if possible) from surface runoff areas documented in the July 1980, SCDHEC report. Samples will also be collected from Myers Creek, an intermittent stream that joins Myers Creek southeast of the site, and the drainage ditch from the site.	Surface water and sediment sampling will be performed as necessary; see Section 2.9. All samples will be analyzed for full TCL. Ten percent of the samples will be split with EPA, as specified and collected in the field by Versar.
Subtask 3.6	Ground Water Screening	Twenty-five ground water samples will be collected from existing monitoring wells installed by Golder & Associates and analyzed for TCL metals and volatile organic compounds by a local laboratory for quick turnaround service. These data will aid in determining the rate at which the ground water contaminant plume is migrating and provide guidance for new monitor well locations.	Of the existing wells, 20 that are suitable for sampling will be sampled and samples shipped to IT's laboratory in Knoxville, Tennessee for analysis. All samples will be analyzed for TCL volatile and metals, and 20 percent for full TCL. Ten percent of the samples will be split with EPA, as specified and collected in the field by Versar. In addition, a passive soil organic vapor (SOV) survey will be performed utilizing the Petrex methodology and equipment. The Petrex SOV Survey Plan is included as Appendix C to this Implementation Plan. The data from the existing wells, temporary wells, (Subtask 3.9), and the SOV survey will be used to delineate the extent of contaminant migration on site and adjacent properties. Rapid turnaround samples is not required.

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
Subtask 3.7	Lagoon Surface Water and Sediment Sampling	To characterize the lagoon surface water and sediment quality, three locations will be used to collect samples at the open lagoon. All samples will be collected in accordance with the procedures discussed in Section 4.6 and 4.11 of ESD SOPs. These samples will be analyzed by a CLP laboratory for TCL compounds.	Samples will be collected and sent to IT's Certified Analytical Laboratory in Knoxville, Tennessee for analyses. These samples will be analyzed for the full TCL. Ten percent of the samples will be split with EPA, as specified and collected in the field by Versar.
Subtask 3.8	Lagoon Soil Sampling	Six soil sampling locations will be required at both the lagoons to determine the hazardous nature of the filled and open lagoons.	Sampling will be performed as stated, and analyzed by IT for the full TCL. Ten percent of the samples will be split with EPA, as specified and collected in the field by Versar.
Subtask 3.9	Installation and Sampling of Temporary Wells	In addition to the 25 existing wells, 16 ground water samples will be collected from shallow (surficial aquifer) temporary wells to better define the extent of the ground water plume migrating from the site. These samples will also be analyzed by a local laboratory for quick turnaround service. The samples will be analyzed for VOC and metals. These data, combined with existing monitor well samples, will provide for more accurate placement of new permanent monitor wells.	The wells will be installed as described in Section 2.7 of the Implementation Plan. Wells will be developed and samples collected for TCL volatiles and metals which will be analyzed by IT's laboratory. As agreed, quick turnaround will not be required. Ten percent of the samples will be split with EPA, as specified and collected in the field by Versar.

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
3.10	Soil Boring and Sampling	<p>Twenty-nine soil borings will be completed within and near the study area at the Bluff Road site. Exact locations will be determined in the field and will be based on information generated from the site screening investigation. These borings will be completed to identify contaminant concentrations and the general subsurface conditions. Samples will be collected in selected areas of the site as follows:</p> <ul style="list-style-type: none"> • Soil borings on site for chemical analysis • Soil borings immediately down-gradient of the site for chemical analysis • Soil borings immediately up-gradient of the site for chemical analysis 	<p>Soil borings will be performed and samples collected as described in the Work Plan. Samples will be sent to IT's laboratory for analysis. All soil samples will be analyzed for full TCL. Ten percent of the samples will be split with EPA, as specified and collected in the field by Versar. Selected soil samples will also be collected for geotechnical testing. This data will be utilized for evaluation of engineering alternatives.</p>

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
Subtask 3.11	Ground Water Investigations, including Installation, Sampling, and Slug Testing of New Permanent Monitoring Wells	To eliminate the identified data gaps and deficiencies, approximately 17 shallow monitor wells and four deep monitor wells will be installed at and near the Bluff Road site. The exact locations of the wells will be determined in the field and will be based on existing data and the data generated from the earlier screening activities. Slug tests will be performed to evaluate hydraulic conductivity of the aquifers and determine flow direction. Undisturbed soil samples will be obtained from the clay aquitard for analysis. All monitoring well construction will be stainless steel, and all ground water samples will be analyzed by a CLP laboratory for TCL analysis.	The number, location, and depth of wells to be installed will be based on the results of the initial field investigation and will meet the objectives of the RI. Ground water samples will be collected for analysis and slug tests will be performed. All samples will be analyzed for TCL volatiles and metals, and 20 percent for full TCL. Ten percent of the samples will be split with EPA, as specified and collected in the field by Versar. Selected auger boring samples will be collected for geotechnical testing, as described for the soil borings and sampling (Subtask 3.10).

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
Subtask 3.12	Aquatic Biota Survey	The aquatic biota survey will determine the abundance and diversity of fish and benthic macroinvertebrates in the streams at the surface water sampling stations in the vicinity of the site. The survey will be performed during the field investigation normal flow conditions. For all organisms observed, it will be determined if they are tolerant or intolerant species.	A "decision tree" (described in Section 2.9 of the Implementation Plan) will be used to determine if the aquatic biota survey will be necessary. This is described in detail in this Implementation Plan. permanent flowing stream downgradient of the site is Myers Creek, which is an overgrown drainage way with a very low flow rate. Shallow standing water is typically present in the wooded area downgradient and along the ditches of an unpaved access road south and east of the site.
Subtask 3.13	Abandonment of 11 existing monitoring wells	The monitoring wells (W-1 to W-11) installed by SCDHEC will be located and properly abandoned because of questionable construction techniques. A survey by Golder Associates located eight of these wells, however, the remaining three should also be located, if possible, and properly abandoned.	All efforts will be made to locate and abandon the 11 SCDHEC wells.
Subtask 3.14	Surveying	A subcontracted licensed surveyor will provide horizontal and vertical locations for all new monitor wells and locations of all soil borings. In addition, the surveyor will define the site area and provide a base map with all wells and borings located.	A local surveying subcontractor will be used during Subtasks 3.6 (layout of SOV survey grid), and Subtasks 3.9, 3.10, 3.11, and 3.13 of the Ebasco Work Plan (location of soil borings and well monitoring locations and elevations). These will be plotted on the topographic maps prepared during the site reconnaissance (Subtask 3.1).

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
Subtask 3.15	On Site Tank	The on site tank will be addressed in the FS if it is not removed as part of an expedited response action.	A draft tank removal plan is being prepared and will be submitted to EPA for approval.
Task 4	Sample Analysis and Data Validation		Exceptions are noted in Section 2.11.
Subtask 4.1	Sample Analysis	Table 4-1 of the Work Plan identifies the media to be sampled, the number of samples of each medium, the number of associated QA/QC samples, the parameters for which the samples will be analyzed, and the laboratory at which the samples will be analyzed, and the laboratory at which the analyses will be carried out (CLP and/or local laboratory). Field analysis of pH, temperature and specific conductance will be carried out as specified in Region IV Environmental Services Division's Standard Operating Procedures (ESD SOPs).	Table 2-1 of this Implementation Plan contains the information for the analytical program proposed by the Group.

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
Subtask 4.2	Quality Control and Data Validation	<p>Quality control (QC) during analysis through the CLP program is described by EPA's CLP Caucus for Inorganic Protocol (CLP-CIP) and Caucus for Organic Protocol (CLP-COP). Quality Control through the local laboratories is described in Appendix A of the FOP. Quality control for all other aspects of this task will be in accordance with the Region IV ESD SOPs. QC samples are included in Table 4-1 of the Work Plan.</p> <p>Validation of laboratory analyses includes the following activities:</p> <ul style="list-style-type: none"> • Verifying system calibration • Auditing quality control activities • Verifying compound identification • Auditing chain of custody and sample holding time • Checking intermediate calculations • Qualifying data when necessary 	Table 2-1 of this Implementation Plan contains this information for the analytical program proposed by the Group.

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
Subtask 4.2 (Continued)		The review and validation of CLP and local laboratory data will be performed according to the current Region IV ESD QA/QC guidelines.	
Task 5	Data Evaluation	The purpose of this task is to organize the validated data collected from the field and laboratories into a working format for analysis, and then perform the necessary calculations and evaluations to meet the project objectives. Task 5 has two distinct components: data reduction and data evaluation. Descriptions of these components are given in the Work Plan.	Task 5 will be implemented as stated.

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
Task 6	Baseline Public Health/Environmental Assessment	<p>The baseline public health/environmental assessment will address the potential human health and environmental effects associated with the Bluff Road site under the no-action alternative. Evaluation of the no-action alternative is required under Section 300.68(f) (v) of the National Contingency Plan (NCP).</p> <p>The main steps in this assessment will be performed in accordance with the latest EPA policy and guidance on risk assessments in general and for Superfund sites in particular. These steps are:</p> <ul style="list-style-type: none"> • Baseline site assessment • Exposure assessment • Comparison of Environmental considerations with ARARs. 	Task 6 will be implemented as stated, except where noted below.

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
Subtask 6.1	Baseline Site Assessment	<p>The chemical data from the RI effort will be compiled and reviewed. Toxicology data on the contaminants of concern will be gathered from EPA sources and other literature, with information published by the EPA preferentially used.</p> <p>Indicator chemicals will be selected from the list of compounds of concern based on toxicity, environmental concentration, available toxicological information, and contaminant class representativeness. The indicator compounds will then be used in the exposure assesement.</p>	Subtask 6.1 will be implemented as stated.

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
Subtask 6.2	Exposure Assessment	<p>Possible exposure routes will be determined based on RI data. Exposure point concentrations will be documented by use of actual measurements, modeling, or interpolation, based on available data. If modeling is necessary, the models will be selected from available literature (i.e., EPA publications and reviewed journals).</p> <p>Chemical intakes for each human exposure scenario will be estimated based on frequency and duration of exposure and rate of media intake. The assumptions used in this risk assessment will be selected to represent an "average exposure case" and a "plausible maximum case".</p>	Subtask 6.2 will be implemented as stated based on the discussion presented in Section 2.12.

B-14

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
		The exposure assessment will use simple models to estimate the risk of hazard index. Since estimates or results from models will be used to define the body burden, a range of values will be produced. A series of distributions will be formulated to represent these ranges.	
Subtask 6.3	Environmental Assessment	Site chemical data, exposure point estimates, and biological monitoring data will be evaluated with respect to the potential environmental effects of site contaminants. The flora and fauna of the site will be included in this assessment. The type of flora and fauna to be considered will be developed by direct observation and contrasted with the most probable species to be present given the site location and history. The environmental assessment will be limited in scope and a full modeling and specification count will not be attempted.	The floral and faunal data will be collected by local specialists from the University of South Carolina and Benedict College, both in Columbia, South Carolina. All other data collection and analysis will be conducted using standard environmental assessment procedures by IT Corporation.

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
Subtask 6.4	ARARS Comparison	In addition to critical toxicity values, any applicable or relevant and appropriate requirements (ARARs) that have been identified by the state of South Carolina will be used to evaluate the site. The ARARs will be compared to the exposure point estimates previously developed to determine the applicability of remedial actions. Specifically, the potential of the no action alternative will be discussed. Currently, the EPA considers maximum contaminant levels (MCLs) developed under the Safe Drinking Water Act, Federal Ambient Water Quality Criteria (AWQC), National Ambient Air Quality Standards (NASQS), and state environmental laws to represent potential ARARs for use in risk assessment at Superfund sites.	This activity will be performed by IT personnel.
Task 7	Treatability Study/Pilot Testing	During the RI, samples of the soil and ground water will be analyzed for physical as well as chemical characteristics. The test results will be evaluated to determine the feasibility of the technologies being screened.	Task 7 will be performed as necessary in accordance with the Work Plan procedure.

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
Task 7 (Continued)		If evaluation, of RI data indicates site-specific treatability/compatibility studies, or other pilot testing are necessary to complete the FS, an Engineering Evaluation and Cost Analysis for these activities will be prepared for review and approval by the EPA.	
Task 8	Remedial Investigation Report	The Remedial Investigation report task includes all work efforts related to the documentation of the results once the data have been evaluated and the risk assessment performed. This task covers both the draft and final remedial investigation report.	Task 8 will be performed as stated.

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Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
Task 9	Remedial Alternatives Screening	In this task, remedial alternatives will be screened as the first step in the FS process. This task will employ data collected in the RI Field Investigation (Task 3) and Risk Assessment (Task 6).	Task 9 will be performed as stated.
Task 10	Remedial Alternatives Evaluation	The alternatives passing through the initial screening will be analyzed in further detail against a range of factors and compared against one another.	Task 10 will be performed as stated.
Task 11	Feasibility Study Report	<p>Task 11 will consist of the following:</p> <ul style="list-style-type: none"> • Summarize each alternative in terms of detailed technology, reliability, implementability, public health, environment, institutional requirements, and cost evaluation • Compare the remedial alternatives • Prepare the FS report. 	Task 11 will be performed as stated.

Table B-1. (Continued)

EBASCO Work Plan			
Task No.	Title	Description	Proposed Implementation
Task 12	Post RI/FS Support	The PRPs will provide support to EPA for any requested assistance in activities that occur after the Bluff Road site RI/FS is completed. The scope for this effort, if needed, will be determined in meetings with EPA after the RI/FS report is approved and support activities identified.	Task 12 will be performed as stated.
Task 13	Deleted.	Not included in Ebasco Work Plan.	No action required.
Task 14	Deleted.	Not included in Ebasco Work Plan.	No action required.
Task 15	ERA Planning	As aboveground tank currently remains on the Bluff Road site. The Golder RI report indicated that this tank contains sludge that is contaminated with 2-chlorophenol and phenol. Ebasco believes that an Expedited Response Action (ERA) directed toward remediation of this tank may be warranted.	A draft tank removal plan is being prepared and will be submitted to EPA for approval.

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APPENDIX C

PASSIVE SOIL ORGANIC VAPOR SURVEY PLAN

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C.1 SOIL ORGANIC VAPOR SURVEY

This is a plan and scope of work for performing a passive soil organic vapor (SOV) survey by the Petrex method at the SCDRI site on Bluff Road in Columbia, South Carolina.

The objectives of this survey are to:

- Collect and identify volatile organic compounds (VOCs) in the soil gas that may be indicative of soil or ground water contamination in and around the SCDRI-Bluff Road site
- Map the areal extent and indicate areas of soil contamination and/or potential ground water contamination.

C.2 SURVEY DESIGN

This Petrex SOV survey is designed to focus on particular source areas and survey beyond the anticipated maximum extent of affected ground water.

The base grid consists of 143 collectors spaced 200 feet apart (11 X 13). This spacing was selected to reconnoiter the entire area. Collectors will be installed 50 to 100 feet apart in 5 areas so that the source areas for those well anomalies can be ascertained. These collectors will be in addition to the base grid. The total number of Petrex soil gas collectors will be 240 as illustrated in Figure 1.

The base grid will be established by reference to lines established by a land survey crew immediately before the Northeast Research Institute, Inc. team arrives on site. The land survey team will establish boundary lines for the SOV study area and will establish five east-west and six north-south control lines. The VOCs that will be analyzed are the following:

- Benzene
- Ethylbenzene
- Trichloroethane (TCA)
- Trichloroethylene (TCE)

BRUNING 72425

STARTING DATE:	DATE LAST REV.:	INITIATOR:	DRAWING NO.:
DRAWN BY:	DRAWN BY:	PROJ. MGR.	PROJECT NO.:

C-2

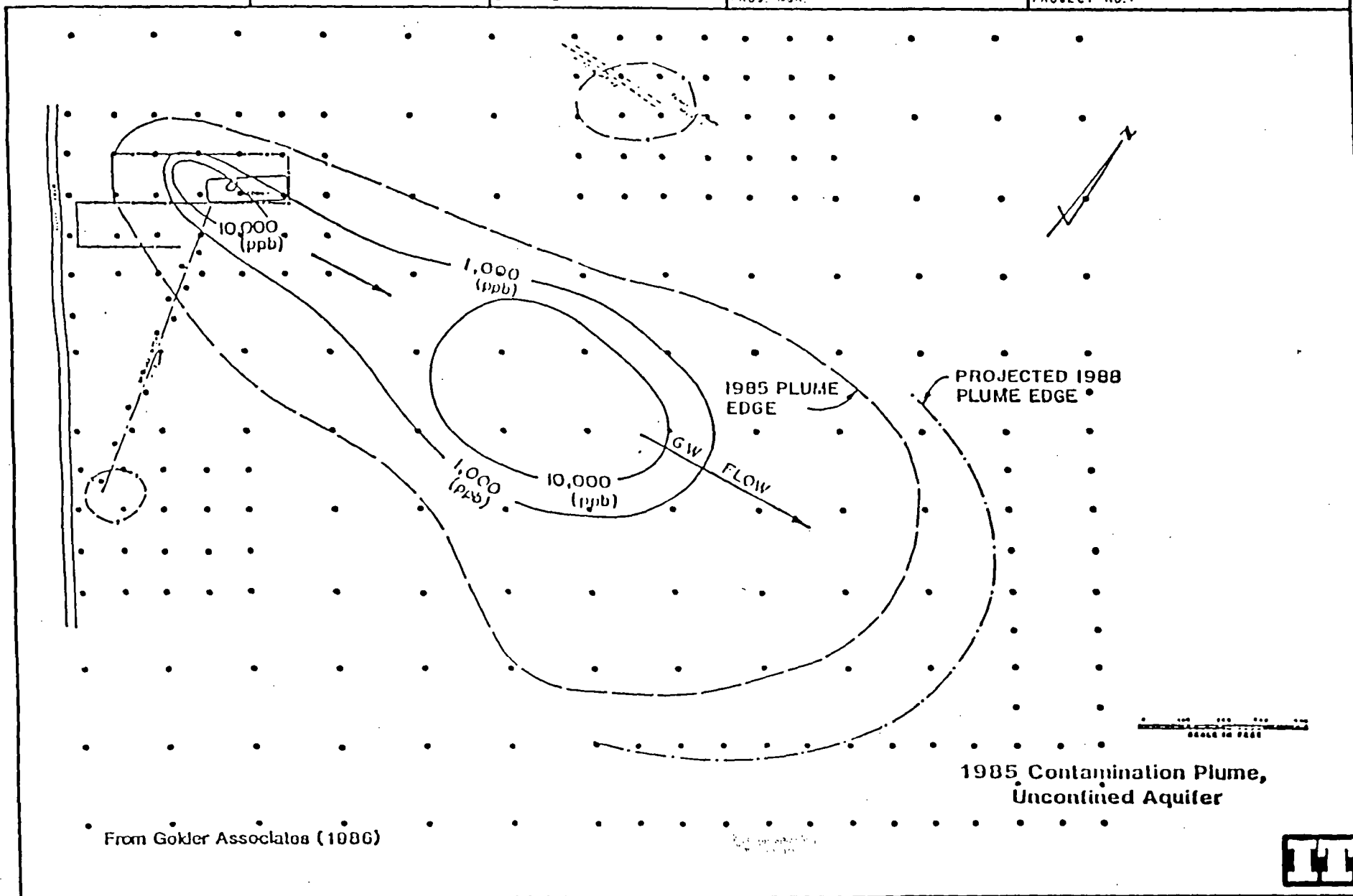


FIGURE C-1
PETREX SOIL GAS SURVEY LOCATIONS

However, the entire database of substances detected can be evaluated for other compounds that may provide a more accurate delineation of the extent of contamination.